Secretary of the FCC
445 12th Street, SW
Washington, DC 20554

Subject: RM-9740

Dear Sir,

Please do not pass RM-9740. To do so could effectively blind radio telescopes and hinder their ability to provide very serious science in the study of astronomy and physics.

Sincerely,

D.J. Beard

D.J. Beard
Radio Astronomy Technician

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Department of Physics and Astronomy · 6127 Wilder Laboratory · TEL.: (603) 646-2854
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December 7, 1999

Secretary of the FCC
445 12th Street, SW
Washington, DC 20554

Subject: RM-9740

Dear Sir,

I am writing to you to provide comments on the proposed rule-making, RM-9740. This proceeding deals with unwanted emissions from satellites and, if modified carelessly, could significantly damage the ability of radio astronomers and earth scientists to successfully produce useful scientific results.

As you know, unwanted emissions (spurious emissions, harmonics, intermod products) from satellites now pose the greatest threat to radio astronomy and passive remote sensing.

Radio observations represent a unique window on the universe, providing scientific data unavailable from telescopes operating at visible-light wavelengths or other parts of the electromagnetic spectrum. Of the ten astronomers who have won the Nobel Prize in Physics, six of them used radio telescopes for their work. The future advancement of astronomy and of physics is dependent upon the preservation of the radio spectrum for observation of the universe with radio telescopes. Relaxing regulations on spurious emissions from satellites will potentially harm these observations.

Because of the sensitivity of radio telescopes, they have been, much like the canary in the mine, the first facilities to suffer from unwanted satellite emissions. However, other services also have begun to be affected, and the problem will only grow as the use of radio spectrum increases.

Radio astronomers are not asking that the spectrum not be used; they simply ask that it be used in a responsible manner, minimizing unwanted emissions that will, in fact, become a problem in the future for other services as well.

The Radio Communication Sector of the International Telecommunications Union has provided excellent guidelines for regulating emissions in radio astronomy bands. Specifically, in bands allocated to radio astronomy, the aggregate unwanted emissions from satellite (or any other) transmitters should not exceed the detrimental interference levels listed in Recommendation ITU-R RA.769. I hope that the FCC will follow this regulation as their guideline in any modification to section 25.202(f) of the Commission's Rules.

Radio astronomy provides us with a window to the universe that can be easily destroyed. I hope the FCC will do its part to keep that window crystal clear and usable so that radio astronomers can continue to provide the exciting and important results that they have dazzled us with over the last 50 years.

Sincerely,

Gary A. Wegner

Gary A. Wegner
Professor of Physics & Astronomy

cc: Allen Yang

Steward Observatory
933 North Cherry Avenue
Tucson, Arizona 85721-0065

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DOCKET FILE COPY ORIGINAL

December 7, 1999

Secretary of the FCC
445 12th Street, SW
Washington, DC 20554

SUBJECT: RM-9740

Dear Sir:

I am Professor at the Department of Astronomy at The University of Arizona in Tucson, concerned about adverse implications of the proposed rule-making, RM-9740. This proceeding deals with unwanted emissions from satellites and, if modified carelessly, could significantly damage the ability of radio astronomers and earth scientists to successfully produce useful scientific results. As you know, unwanted emissions (spurious emissions, harmonics, intermod products) from satellites now pose the greatest threat to radio astronomy and passive remote sensing.

Radio observations represent a unique window on the universe, providing scientific data unavailable from telescopes operating at visible-light wavelengths or other parts of the electromagnetic spectrum. Of the ten astronomers who have won the Nobel Prize in Physics, six of them used radio telescopes for their work. The future advancement of astronomy and of physics is dependent upon the preservation of the radio spectrum for observation of the universe with radio telescopes. Relaxing regulations on spurious emissions from satellites will potentially harm these observations.

Because of the sensitivity of radio telescopes, they have been, much like the canary in the mine, the first facilities to suffer from unwanted satellite emissions. However, other services also have begun to be affected, and the problem will only grow as the use of radio spectrum increases.

Radio astronomers are not asking that the spectrum not be used; they simply ask that it be used in a responsible manner, minimizing unwanted emissions that will, in fact, become a problem in the future for other services as well.

The Radio Communication Sector of the International Telecommunications Union has provided excellent guidelines for regulating emissions in radio astronomy bands. Specifically, in bands allocated to radio astronomy, the aggregate unwanted emissions from satellite (or any other) transmitters should not exceed the detrimental interference levels listed in Recommendation ITU-R RA.769. I hope that the FCC will follow this regulation as their guideline in any modification to section 25.202(f) of the Commission's Rules.

Radio astronomy provides us with a window to the universe that can be easily destroyed. I hope the FCC will do its part to keep that window clear and usable so that radio astronomers can continue to provide exciting and important results.

Sincerely,

James W. Liebert

James W. Liebert

1110 Michigan Avenue
Socorro, NM 87801
505-835-8961
December 10, 1999

Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

DOCKET FILE COPY ORIGINAL

Dear Sir:

I am writing to you in order to comment on the proposed rule-making, RM-9740. This proceeding deals with unwanted and spurious emissions from satellites and satellite networks outside their allocated bands. If modified to significantly ease the current restrictions, this proceeding could significantly harm the ability of earth scientists and radio astronomers to produce significant scientific results. Therefore, I urge that the FCC maintain the limits on unwanted and spurious emissions at the lowest levels possible with modern engineering technology.

Radio astronomy has produced many of the fundamental results in physics over the last six decades, including such discoveries as the faint remnant radiation from the "big bang" that initiated the Universe. The majority of the Nobel Prizes for physics that have been awarded for astronomical discoveries actually have been for work done in radio astronomy. This has been possible only because of the ability of radio astronomers to observe extremely weak cosmic sources in parts of the spectrum that are unpolluted by the strong human-made radio transmitters. The radio part of the spectrum is an avenue by which astrophysicists explore the most extreme phenomena in the Universe. Physics is probed in the regions near massive black holes and in the early Universe, as well as in cold dense clouds where solar systems similar to our own are forming. None of the conditions in these regions, so important for understanding our origins, can be replicated here on Earth.

One might say that astronomers and earth scientists are able to pursue their craft, making fundamental discoveries about our Universe and Earth, because the spectrum is analogous to a protected wilderness area. This protection must be strongly maintained. Just as there is a Wilderness Act for untrammeled regions of the U.S., there must be similar strong protection for currently unpolluted parts of the radio spectrum.

The Wilderness Act is a particularly appropriate analogy as the FCC and the World Radio Conference proceed with allocations for higher and higher radio frequencies. These frequencies are currently affected very little by pollution from human-made transmitters, and are areas where the potential for important advances exists in remote sensing of the Earth and in radio astronomy. The special capabilities in this part of the spectrum deem it worthy of careful and rigorous protection. Operation by satellite transmitters in these higher frequencies must be held to the high standard of currently existing regulations; anything less could be devastating to areas of scientific research in which the United States is the world leader.

In light of the above comments, I refer the FCC to the guidelines of the Radio Communication Sector of the International Telecommunications Union for regulating unwanted emissions in the radio astronomy bands. These guidelines are listed in Recommendation ITU-R RA.769. I urge the FCC to keep any modifications in RM-9740 consistent with the ITU recommendation, in order to maintain the currently existing radio window on the Universe.

Yours sincerely,

James S Ulvestad

James S. Ulvestad, Ph.D.

cc: Allen Yang, FCC International Bureau